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From: Yeh, Alice
Sent: Thur 2/2/2017 3:43:48 PM
Subject: FW: For today's call

FYI

From: Yeh, Alice
Sent: Thursday, February 02, 2017 9:12 AM
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Subject: For today's call

We have been talking to Don Hayes and Paul Schroeder some more about how to model loss due to dredging more realistically (to incorporate the concept of “fall back” vs resuspension from bucket movement that they emphasized so much at last Thurs’ meeting). Following is a summary of where we are on that.

During today’s call, HDR will walk through these proposed changes to the model, then talk about the 1st 2 proposed simulations below. We should talk about any simulations that you may be considering. The last 6 simulations at the bottom of the list are things we have considered in the past, but may not be worth doing until we get the results back from the 1st 2 simulations – we won’t spend too much time discussing them, unless you see something of interest.

From: Wands, James [mailto:James.Wands@hdrinc.com]
Sent: Wednesday, February 01, 2017 5:16 PM
To: Thompson, Scott <sthompson@louisberger.com>; Bilimoria, Maheyar <mbilimoria@louisberger.com>; Loor, Thalia <tloor@louisberger.com>; Beth Franklin (Elizabeth.A.Franklin@usace.army.mil) <Elizabeth.A.Franklin@usace.army.mil>; Yeh, Alice <Yeh.Alice@epa.gov>; Eugenia Naranjo <eugenia.nar@gmail.com>; Garland, Edward <Edward.Garland@hdrinc.com>; Gbondo-Tugbawa, Solomon <SGbondo-Tugbawa@louisberger.com>
Subject: RE: EPS Modeling - 31JAN call backbrief / 02FEB call prep

All,

Here is the proposed approach for using the model to represent placement of a stabilization layer before a model grid cell is dredged completely.

Represent contaminant releases during dredging as two parts: the releases from the bucket and resuspension of residuals from the dredged cell prior to stabilization.

- Dredging releases (directly from dredge bucket, reduced relative to previous simulations (e.g. from 3% to 1%))

- 0.5% of the dredged mass released to the surface layer of the water column

- 0.5% of the dredged mass released to the bottom layer of the water column (does not include the release of residuals)

- Residuals resuspension options

- Option 1 – represent the resuspension of residuals as a constant release rate to the bottom layer of the water column as a fraction of the dredged mass (seeking input from Paul and Don on this value)

- Option 2 – represent the cell's erosion properties (critical shear stress and erosion rate) as a combination of:

  - Undredged – higher critical shear stress, low erosion rate, fraction = (total dredge days for grid cell – days since start of dredging for grid cell) / total dredge days for grid cell

  - Dredged – low critical shear stress, high erosion rate, fraction = 1 / total dredge days for grid cell

  - Stabilized – Higher critical shear stress, low erosion rate, fraction = (total dredge days for grid cell – days since start of dredging for grid cell - 1) / total dredge days for grid cell

- stabilization would follow a day after dredging (this could be any duration for testing purposes)

- Stabilization would be approximately 2 inches

- Check that this maintains an exposed area of less than an acre (initial check looks like about 0.2 acres/day on average)

- This will require some additional thought on how to represent the properties for each of the three fractions of the grid cell as well as how to represent the combination of properties

- Capping options

- Option 1 – Capping at the end of each season, dredging ending early enough to complete cap prior to the start of the fish window

- Option 2 – Capping at the end of the project (is this possible with a six year schedule and the combination of dredge and cap production rates?)

Once these changes are incorporated, the following simulations should be considered:

1. Simulate the construction period with our best estimates for the input values incorporating the changes noted above.

2. Perform a one in one hundred year flood simulation at the end of each dredging season assuming only the residual stabilization layer has been placed after dredging.

Other simulations that we have discussed doing but would re-evaluate after the above analyses:

- Basing the dredging sequence on contaminant concentrations (generally higher to lower).

- To address the question of effect of hydrograph used during the dredging simulation, which starts when the river is at low flow conditions – change the sequence of years included in the dredging period. The calibration included the years 1995 through 2013, and dredging (in 2020) starts with 2002 flows and ends in the year with 2007 flows. Dredging could start with the hydrograph from any other year, and could include the year with hurricane Irene to address comments related to an extreme flow (although dredging would not be represented during the period of Hurricane Irene).

- To evaluate if monitoring could detect a perturbation in dredging performance, insert higher dredging release rates into individual grid cells.

- Re-run the dredging residuals tracking simulation, tracking residuals for all grid cells.

- Once more accurate input values are determined, run with the anticipated delay between dredging and capping, the recommended cap configuration (timing and number of lifts), and track direct dredging and residuals releases.

- To address issue of minimum distance from a dredging operations before capping a grid cell. Run contaminant tracking simulation to numerically tag (similar to delayed capping simulations) contaminants released during dredging from a single cell. Perform 10 simulations of no more than 1-year duration with tagged releases from cells spaced ~2 miles apart including cells in shoals and channel. (This will not be necessary if stabilization is implemented)

Regards,

James